



General

Guideline Title

Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes: U.S. Preventive Services Task Force recommendation statement.

Bibliographic Source(s)

U.S. Preventive Services Task Force. Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med.* 2015 Oct 6;163(7):529-36. [27 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force (USPSTF). Screening for iron deficiency anemia - including iron supplementation for children and pregnant women. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006. 12 p. [12 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and identifies the levels of certainty regarding net benefit (High, Moderate, and Low). The definitions of these grades can be found at the end of the "Major Recommendations" field.

Summary of Recommendations and Evidence

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for iron deficiency anemia in pregnant women to prevent adverse maternal health and birth outcomes. (I statement)

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of routine iron supplementation for pregnant women to prevent adverse maternal health and birth outcomes. (I statement)

Clinical Considerations

Patient Population Under Consideration

This recommendation addresses screening and supplementation in pregnant women and adolescents living in the United States who do not have symptoms of iron deficiency anemia. It does not address pregnant women who are malnourished, have symptoms of iron deficiency anemia, or have special hematologic conditions or nutritional needs that may increase their need for iron. Screening for iron deficiency anemia in young children is addressed in a separate recommendation statement (see the National Guideline Clearinghouse [NGC] summary of the USPSTF guideline [Screening for iron deficiency anemia in young children: USPSTF recommendation statement](#)).

Suggestions for Practice Regarding the I Statement

Potential Preventable Burden

Based on older data, estimates of the prevalence of iron deficiency anemia in pregnant women in the United States range from 2% to 27%, with higher rates in later trimesters and minority populations. Based on calculations of total body iron from 1999 to 2006 National Health and Nutrition Examination Survey (NHANES) data, the estimated prevalence of iron deficiency in pregnant women is 18.6%; of these, 16.2% also have anemia. However, given the physiologic hemodilution that normally occurs during the later stages of pregnancy, determining exact prevalence rates of anemia in pregnant women may be difficult.

Several factors have been identified that may increase a pregnant woman's risk for iron deficiency anemia, including a diet lacking in iron-rich foods (for example, a vegetarian diet with inadequate sources of iron), gastrointestinal disease and/or medications that can decrease iron absorption (for example, antacids), and a short interval between pregnancies. Non-Hispanic black and Mexican American women have higher prevalence rates of iron deficiency than white women and women with parity of 2 or more. Evidence on additional risk factors, such as lower educational level and family income, has been less consistent. On the basis of a literature scan, the USPSTF found limited evidence on the use of risk prediction tools to identify pregnant women who are at increased risk for iron deficiency anemia.

Many observational studies have explored the association between adverse maternal and infant health outcomes (such as postpartum hemorrhage, preterm birth, low birthweight, and perinatal death) and iron deficiency or iron deficiency anemia in pregnancy, but findings have been inconclusive.

Potential Harms

The harms of screening for iron deficiency anemia have not been well-studied but are likely minor. Potential harms of screening include false-positive results, anxiety, and cost. Reported adverse events of iron supplementation or treatment with iron include limited gastrointestinal symptoms, darkening color of urine or stool, staining of teeth and gums, and drug interactions with other medications.

Current Practice

Rates of screening for iron deficiency anemia and iron supplementation in pregnant women by clinicians are not well-documented. However, based on anecdotal evidence, it is probably common. In addition, there may be other reasons to screen for anemia in pregnant women, such as to prepare for cesarean delivery or anticipated blood loss during a complicated delivery. Older data from 1988 show that 97% of pregnant women who received prenatal care reported being advised to take a multivitamin–mineral supplement. Based on 1996 to 2006 NHANES data, 77% of pregnant women reported using a supplement within the previous 30 days and they most frequently used a multivitamin containing 48 mg of iron.

Screening Tests

Measurement of serum hemoglobin or hematocrit levels is often the first step used in primary care practice.

Treatment

Treatment of iron deficiency anemia in pregnant women is similar to that in nonpregnant women and includes additional iron intake through oral iron pills, prenatal vitamins, and diet. The usual dose is 60 to 120 mg of elemental iron per day. Intravenous iron treatment is also used during pregnancy.

Supplementation

Prenatal vitamins often include a low dose of iron; the usual dose prescribed in early pregnancy is 30 mg of elemental iron per day. Higher doses (60 to 100 mg of elemental iron per day) are sometimes prescribed in populations at increased risk for iron deficiency anemia.

Other Approaches to Prevention

Dietary Iron

According to the Institute of Medicine, the Recommended Dietary Allowance for iron in pregnant women is 27 mg per day. Natural food sources of iron include certain fruits, vegetables, meat, and poultry. The Institute of Medicine also notes that nonheme iron, which is found in vegetarian

diets, may be less well-absorbed than heme iron, which is found in diets containing meat; therefore, the iron requirement may be almost twice as much in women who eat a purely vegetarian diet.

Fortified breads and grain products (such as cereal) are also important potential sources of iron. Federally regulated iron fortification of U.S. food products began in 1941, and the iron content in enriched grain products has increased over the years. It is estimated that more than 50% of the iron in the U.S. food supply comes from iron-fortified cereal grain products.

Useful Resources

The USPSTF has published separate recommendation statements on screening for iron deficiency anemia in young children (see the NGC summary of the USPSTF guideline [Screening for iron deficiency anemia in young children: USPSTF recommendation statement](#)) and folic acid supplementation during pregnancy (available at www.uspreventiveservicestaskforce.org).

Definitions

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer/provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read the "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as: <ul style="list-style-type: none">• The number, size, or quality of individual studies• Inconsistency of findings across individual studies

Level of Certainty	Description
	<ul style="list-style-type: none"> • Limited generalizability of findings to routine primary care practice • Lack of coherence in the chain of evidence
	As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none"> • The limited number or size of studies • Important flaws in study design or methods • Inconsistency of findings across individual studies • Gaps in the chain of evidence • Findings not generalizable to routine primary care practice • A lack of information on important health outcomes <p>More information may allow an estimation of effects on health outcomes.</p>

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Iron deficiency anemia

Guideline Category

Prevention

Screening

Treatment

Clinical Specialty

Family Practice

Obstetrics and Gynecology

Preventive Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Nurses

Physician Assistants

Guideline Objective(s)

To summarize the U.S. Preventive Services Task Force (USPSTF) recommendations on screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes

Target Population

Pregnant women and adolescents living in the United States who do not have symptoms of iron deficiency anemia

Note: This guideline does not address pregnant women who are malnourished, have symptoms of iron deficiency anemia, or have special hematologic conditions or nutritional needs that may increase their need for iron.

Interventions and Practices Considered

1. Screening for iron deficiency anemia
2. Routine iron supplementation

Major Outcomes Considered

Supplementation

- Key Question 1: What are the benefits of routine iron supplementation in pregnant women on maternal and infant health outcomes?
- Key Question 2: What are the harms of routine iron supplementation in pregnant women?

Screening

- Key Question 1: What are the benefits of screening asymptomatic pregnant women for iron deficiency anemia on maternal and infant health outcomes?
- Key Question 2: What are the harms of screening for iron deficiency anemia in pregnant women?
- Key Question 3: What are the benefits of treatment for iron deficiency anemia in pregnant women on maternal and infant health outcomes?
- Key Question 4: What are the harms of iron treatment in pregnant women?
- Key Question 5: What is the association between a change in maternal iron status (including changes in ferritin or hemoglobin level) and improvement in newborn and peripartum outcomes in U.S.-relevant populations?

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review and full report were prepared by the Pacific Northwest Evidence-based Practice Center for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Data Sources

The investigators searched the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, and Ovid

MEDLINE (1996 to August 2014) (see Appendix Table 1 in the systematic review). They also searched reference lists of relevant systematic reviews to identify studies published before 1996, the year that the prior reviews concluded.

Study Selection

Abstracts were selected for full-text review if they included asymptomatic pregnant women receiving screening or supplementation for iron deficiency anemia, were relevant to a key question, and met predefined inclusion criteria. For the screening framework, key questions focused on the effectiveness of screening compared with not screening in preventing adverse health outcomes and reducing the incidence of complications, as well as the association of improvements in intermediate and clinical health outcomes with harms (including infant harms). Health outcomes included long- or short-term maternal and infant morbidity (including birth outcomes), infant mortality, and maternal quality of life (including postpartum depression) resulting from screening, supplementation, or treatment and related harms. Intermediate outcomes included iron status based on hematologic indices, including ferritin levels. Additional outcomes included the relationship between a change in maternal iron status and maternal and infant health outcomes. The investigators focused on studies using iron supplementation and treatment regimens commonly used in clinical practice in the United States and those conducted in countries with "high" or "very high" human development based on the United Nations Human Development Index. They included only English-language articles and excluded studies published as abstracts or without original data. Two reviewers independently evaluated each study to determine inclusion eligibility. The investigators included randomized, controlled trials; nonrandomized, controlled trials; and cohort studies for all key questions. When good- and fair-quality studies were available, poor-quality studies were excluded. The selection of studies is summarized in Figure 1 of the systematic review.

Number of Source Documents

See the flow diagram (Figure 1) in the systematic review for a summary of evidence search and selection.

Screening for Iron Deficiency Anemia

- Key question 1:
 - Maternal clinical outcomes: 5 trials
 - Infant birth outcomes: 11 trials
 - Hematologic outcomes: 12 trials (14 publications)
- Key question 2: 10 trials

Routine Iron Supplementation

- Key question 1: No studies
- Key question 2: No studies
- Key question 3: No studies
- Key question 4: No studies
- Key question 5: No studies

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Two investigators independently applied criteria developed by the U.S. Preventive Services Task Force (USPSTF) to rate the quality of each study as good, fair, or poor (see Appendix A5 in the full report [see the "Availability of Companion Documents" field]).

Methods Used to Analyze the Evidence

Meta-Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review and full report were prepared by the Pacific Northwest Evidence-based Practice Center for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Data Abstraction and Quality Rating

One investigator abstracted details about study design, patient population, setting, screening method, analysis, follow-up, and results. A second investigator reviewed the data abstraction for accuracy. Using predefined criteria developed by the USPSTF, 2 investigators rated the quality of studies (good, fair, or poor) and resolved discrepancies by consensus.

Data Synthesis and Analysis

The investigators assessed the aggregate internal validity (quality) of the body of evidence for each key question (good, fair, or poor) by using methods developed by the USPSTF, based on the number, quality, and size of studies; consistency of results among studies; and directness of evidence.

Meta-analysis was performed when studies were available that used comparable dosages, durations, and timing of outcome assessment. The investigators conducted meta-analyses using the Mantel-Haenszel random- or fixed-effects models in Review Manager, version 5.2 (Cochrane Collaboration), to calculate risk ratios of the effects of routine iron supplementation on incidence of preterm delivery, low birthweight, and maternal iron deficiency anemia and iron deficiency at term. Statistical heterogeneity was assessed using the I^2 statistic. Due to methodological shortcomings in the studies and differences across studies in design, interventions (timing and dosing), patient populations, and other factors, meta-analysis was not attempted for all outcome measures.

Methods Used to Formulate the Recommendations

Balance Sheets

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The U.S. Preventive Services Task Force (USPSTF) systematically reviews the evidence concerning both the benefits and harms of widespread implementation of a preventive service. It then assesses the certainty of the evidence and the magnitude of the benefits and harms. On the basis of this assessment, the USPSTF assigns a letter grade to each preventive service signifying its recommendation about provision of the service (see Table below). An important, but often challenging, step is determining the balance between benefits and harms to estimate "net benefit" (that is, benefits minus harms).

U.S. Preventive Services Task Force Recommendation Grid*

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	Insufficient			

*A, B, C, D, and I (*Insufficient*) represent the letter grades of recommendation or statement of insufficient evidence assigned by the USPSTF after assessing certainty and magnitude of net benefit of the service (see the "Rating Scheme for the Strength of the Recommendations" field).

The overarching question that the USPSTF seeks to answer for every preventive service is whether evidence suggests that provision of the service would improve health outcomes if implemented in a general primary care population. For screening topics, this standard could be met by a large randomized, controlled trial in a representative asymptomatic population with follow-up of all members of both the group "invited for screening" and the group "not invited for screening."

Direct randomized, controlled trial evidence about screening is often unavailable, so the USPSTF considers indirect evidence. To guide its selection of indirect evidence, the USPSTF constructs a "chain of evidence" within an analytic framework. For each key question, the body of pertinent literature is critically appraised, focusing on the following 6 questions:

1. Do the studies have the appropriate research design to answer the key question(s)?
2. To what extent are the existing studies of high quality? (i.e., what is the internal validity?)
3. To what extent are the results of the studies generalizable to the general U.S. primary care population and situation? (i.e., what is the external validity?)
4. How many studies have been conducted that address the key question(s)? How large are the studies? (i.e., what is the precision of the evidence?)
5. How consistent are the results of the studies?
6. Are there additional factors that assist the USPSTF in drawing conclusions (e.g., presence or absence of dose-response effects, fit within a biologic model)?

The next step in the USPSTF process is to use the evidence from the key questions to assess whether there would be net benefit if the service were implemented. In 2001, the USPSTF published an article that documented its systematic processes of evidence evaluation and recommendation development. At that time, the USPSTF's overall assessment of evidence was described as good, fair, or poor. The USPSTF realized that this rating seemed to apply only to how well studies were conducted and did not fully capture all of the issues that go into an overall assessment of the evidence about net benefit. To avoid confusion, the USPSTF has changed its terminology. Whereas individual study quality will continue to be characterized as good, fair, or poor, the term *certainty* will now be used to describe the USPSTF's assessment of the overall body of evidence about net benefit of a preventive service and the likelihood that the assessment is correct. Certainty will be determined by considering all 6 questions listed above; the judgment about certainty will be described as high, moderate, or low.

In making its assessment of certainty about net benefit, the evaluation of the evidence from each key question plays a primary role. It is important to note that the USPSTF makes recommendations for real-world medical practice in the United States and must determine to what extent the evidence for each key question—even evidence from screening randomized, controlled trials or treatment randomized, controlled trials—can be applied to the general primary care population. Frequently, studies are conducted in highly selected populations under special conditions. The USPSTF must consider differences between the general primary care population and the populations studied in randomized, controlled trials and make judgments about the likelihood of observing the same effect in actual practice.

It is also important to note that one of the key questions in the analytic framework refers to the potential harms of the preventive service. The USPSTF considers the evidence about the benefits and harms of preventive services separately and equally. Data about harms are often obtained from observational studies because harms observed in randomized, controlled trials may not be representative of those found in usual practice and because some harms are not completely measured and reported in randomized, controlled trials.

Putting the body of evidence for all key questions together as a chain, the USPSTF assesses the certainty of net benefit of a preventive service by asking the 6 major questions listed above. The USPSTF would rate a body of convincing evidence about the benefits of a service that, for example, derives from several randomized, controlled trials of screening in which the estimate of benefits can be generalized to the general primary care population as "high" certainty (see the "Rating Scheme for the Strength of Recommendations" field). The USPSTF would rate a body of evidence that was not clearly applicable to general practice or has other defects in quality, research design, or consistency of studies as "moderate" certainty. Certainty is "low" when, for example, there are gaps in the evidence linking parts of the analytic framework, when evidence to determine the harms of treatment is unavailable, or when evidence about the benefits of treatment is insufficient. Table 4 in the methodology document listed below (see "Availability of Companion Documents" field) summarizes the current terminology used by the USPSTF to describe the critical assessment of evidence at all 3 levels: individual studies, key questions, and overall certainty of net benefit of the preventive service.

Sawaya GF, Guirguis-Blake J, LeFevre M, Harris R, Petitti D; U.S. Preventive Services Task Force. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. *Ann Intern Med.* 2007;147(12):871-875. [5 references].

I Statements

For I statements, the USPSTF has a plan to commission its Evidence-based Practice Centers to collect information in 4 domains pertinent to clinical decisions about prevention and to report this information routinely. This plan is described in the paper: Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. *Ann Intern Med.* 2009;150:199-205. www.annals.org

The first domain is potential preventable burden of suffering from the condition. When evidence is insufficient, provision of an intervention designed to prevent a serious condition (such as dementia) might be viewed more favorably than provision of a service designed to prevent a condition that

does not cause as much suffering (such as rash). The USPSTF recognized that "burden of suffering" is subjective and involves judgment. In clinical settings, it should be informed by patient values and concerns.

The second domain is potential harm of the intervention. When evidence is insufficient, an intervention with a large potential for harm (such as major surgery) might be viewed less favorably than an intervention with a small potential for harm (such as advice to watch less television). The USPSTF again acknowledges the subjective nature and the difficulty of assessing potential harms: for example, how bad is a "mild" stroke?

The third domain is cost—not just monetary cost, but opportunity cost, in particular the amount of time a provider spends to provide the service, the amount of time the patient spends to partake of it, and the benefits that might derive from alternative uses of the time or money for patients, clinicians, or systems. Consideration of clinician time is especially important for preventive services with only insufficient evidence because providing them could "crowd out" provision of preventive services with proven value, services for conditions that require immediate action, or services more desired by the patient. For example, a decision to routinely inspect the skin could take up the time available to discuss smoking cessation, or to address an acute problem or a minor injury that the patient considers important.

The fourth domain is current practice. This domain was chosen because it is important to clinicians for at least 2 reasons. Clinicians justifiably fear that not doing something that is done on a widespread basis in the community may lead to litigation. More important, addressing patient expectations is a crucial part of the clinician–patient relationship in terms of building trust and developing a collaborative therapeutic relationship. The consequences of not providing a service that is neither widely available nor widely used are less serious than not providing a service accepted by the medical profession and thus expected by patients. Furthermore, ingrained care practices are difficult to change, and efforts should preferentially be directed to changing those practices for which the evidence to support change is compelling.

Although the reviewers did not explicitly recognize it when these domains were chosen, the domains all involve consideration of the potential consequences—for patients, clinicians, and systems—of providing or not providing a service. Others writing about medical decision making in the face of uncertainty have suggested that the consequences of action or inaction should play a prominent role in decisions.

Rating Scheme for the Strength of the Recommendations

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

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B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer/provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer/provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined.	Read the "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a

certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	<p>The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:</p> <ul style="list-style-type: none">• The number, size, or quality of individual studies• Inconsistency of findings across individual studies• Limited generalizability of findings to routine primary care practice• Lack of coherence in the chain of evidence <p>As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.</p>
Low	<p>The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of:</p> <ul style="list-style-type: none">• The limited number or size of studies• Important flaws in study design or methods• Inconsistency of findings across individual studies• Gaps in the chain of evidence• Findings not generalizable to routine primary care practice• A lack of information on important health outcomes <p>More information may allow an estimation of effects on health outcomes.</p>

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Peer Review

Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send the draft evidence review to 4 to 6 external experts and to Federal agencies and professional and disease-based health organizations with interests in the topic. The experts are asked to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. The draft evidence review is also posted on the USPSTF Web site for public comment. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the USPSTF in memo form. In this way, the USPSTF can consider these external comments before it votes on its recommendations about the service. Draft recommendation statements are then circulated for comment among reviewers representing professional societies, voluntary organizations, and Federal agencies, as well as posted on the USPSTF Web site for public comment. These comments are discussed before the final recommendations are confirmed.

Response to Public Comment

A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 31 March to 27 April 2015. A few comments requested more information on which populations are at increased risk for iron deficiency anemia and to which population the recommendation applies. Existing language describing risk factors for iron deficiency anemia and the target population for this recommendation was inserted earlier in the statement to make this information clearer. Some comments also requested separate analyses of certain high-risk populations. Although the USPSTF sought this information, limitations in the evidence prevented it from performing separate analyses. A few comments noted ambiguity in how the terms "iron deficiency" and "iron deficiency anemia" were used. The recommendation was reviewed to ensure consistent use of each term, and language was added to better explain that the focus of the recommendation is on iron deficiency anemia. The USPSTF also clarified that intravenous iron treatment is a potential therapy that is offered in current practice; however, it was not a focus of the current review.

Comparison with Guidelines from Other Groups

Recommendations for screening from the following groups were discussed: the Centers for Disease Control and Prevention (CDC), the Institute of Medicine, the American Congress of Obstetricians and Gynecologists (ACOG), and the American Academy of Family Physicians.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Benefits of Early Detection and Treatment

Screening

The U.S. Preventive Services Task Force (USPSTF) found inadequate evidence on screening for iron deficiency anemia in asymptomatic pregnant women. No studies evaluated the direct effects of routine screening in asymptomatic pregnant women on maternal health or birth outcomes. The USPSTF also found inadequate evidence on the treatment of iron deficiency anemia in pregnant women because none of the recent studies on treatment were generalizable to the general U.S. population. This represents a critical gap in the evidence.

Preventive Medication

Overall, the USPSTF found inadequate evidence on the effect of routine iron supplementation during pregnancy on maternal health or birth outcomes, such as maternal iron deficiency anemia, cesarean delivery, preterm delivery, infant mortality, or low birthweight. Several studies reported inconsistent findings on these health outcomes. The USPSTF found adequate evidence that routine iron supplementation during pregnancy improves intermediate maternal hematologic indexes, such as serum ferritin and hemoglobin levels. The USPSTF found adequate evidence that routine iron supplementation during pregnancy has no effects on the length of gestation and infant Apgar scores at 1 and 5 minutes.

Change in Iron Status

No studies were found that directly assessed the association between change in iron status as a result of treatment or supplementation and improvement in maternal or infant health outcomes. This represents a critical gap in the evidence.

Potential Harms

Harms of Early Detection and Treatment

Screening

The U.S. Preventative Services Task Force (USPSTF) found inadequate evidence on the harms of routine screening for iron deficiency anemia in asymptomatic pregnant women. No studies were found that evaluated the harms of routine screening on maternal health or birth outcomes. The USPSTF found inadequate evidence on the harms of treatment of iron deficiency anemia in pregnant women; no recent studies were generalizable to the current general U.S. population.

Preventive Medication

The USPSTF found adequate evidence that the magnitude of the harms of routine iron supplementation in pregnant women is small to none. Several studies assessed the harms of iron supplementation in pregnant women. Most reported no statistically significant increase in harms. Of the harms reported, most were self-limited and transient effects of treatment, such as nausea, constipation, and diarrhea.

Qualifying Statements

Qualifying Statements

- The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without related signs or symptoms.
- It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment.
- The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.
- Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

Implementation of the Guideline

Description of Implementation Strategy

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the USPSTF will make all its products available through its [Web site](#) . The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access USPSTF materials and adapt them for their local needs. Online access to USPSTF products also opens up new possibilities for the appearance of the annual, pocket-size Guide to Clinical Preventive Services.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major

challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

Implementation Tools

Foreign Language Translations

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

U.S. Preventive Services Task Force. Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med.* 2015 Oct 6;163(7):529-36. [27 references] [PubMed](#)

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1996 (revised 2015 Oct 6)

Guideline Developer(s)

Guideline Developer Comment

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the U.S. Preventive Services Task Force do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or its agencies.

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Guideline Committee

U.S. Preventive Services Task Force (USPSTF)

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Former USPSTF members Virginia Moyer, MD, MPH, and Glen Flores, MD, also contributed to the development of this recommendation.

*Members of the USPSTF at the time this recommendation was finalized. For a list of current Task Force members, go to <http://www.uspreventiveservicestaskforce.org/Page/Name/our-members> .

Financial Disclosures/Conflicts of Interest

The U.S. Preventive Services Task Force (USPSTF) has an explicit policy concerning conflict of interest. All members disclose at each meeting if they have a significant financial, professional/business, or intellectual conflict for each topic being discussed. USPSTF members with conflicts may be recused from discussing or voting on recommendations about the topic in question.

Disclosures

Dr. Gillman reports royalties from Cambridge University Press for the book *Maternal Obesity*. Authors not named here have disclosed no conflicts of interest. Authors followed the policy regarding conflicts of interest described at www.uspreventiveservicestaskforce.org/methods.htm . Disclosures can also be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M15-1707.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force (USPSTF). Screening for iron deficiency anemia - including iron supplementation for children and pregnant women. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2006. 12 p. [12 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the [Annals of Internal Medicine Web site](#) .

Availability of Companion Documents

The following are available:

Evidence Reviews:

- McDonagh M, Cantor A, Bougatsos C, Dana T, Blazina I. Routine iron supplementation and screening for iron deficiency anemia in pregnant women: a systematic review to update the U.S. Preventive Services Task Force recommendation. Evidence Synthesis No. 123. AHRQ Publication No. 13-05187-EF-2. Rockville (MD): Agency for Healthcare Research and Quality; 2015 Mar. 85 p.
- Cantor A, Bougatsos C, Dana T, Blazina I, McDonagh M. Routine iron supplementation and screening for iron deficiency anemia in pregnancy: a systematic review for the U.S. Preventive Services Task Force. Ann Intern Med. 2015 Apr 21;162(8):566-76.

Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .

Background Articles:

- Barton MB et al. How to read the new recommendation statement: methods update from the U.S. Preventive Services Task Force. Ann Intern Med 2007;147:123-27.
- Guirgis-Blake J et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. Ann Intern Med 2007;147:117-22.
- Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. Ann Intern Med 2007;147:871-75.
- Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. Ann Intern Med. 2009;150:199-205.

Available from the [USPSTF Web site](#) .

The following are also available:

- Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes: clinical summary. Rockville (MD): U.S. Preventive Services Task Force. 2015 Sep. 1 p. Available from the [USPSTF Web site](#) .
- A continuing medical education (CME) activity is available from the [Annals of Internal Medicine Web site](#) .
- The guide to clinical preventive services, 2014. Recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2014. 144 p. Available from the [AHRQ Web site](#) .

The [Electronic Preventive Services Selector \(ePSS\)](#) is an application designed to provide primary care clinicians and health care teams timely decision support regarding appropriate screening, counseling, and preventive services for their patients. It is based on the current, evidence-based recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

Patient Resources

The following are available:

- Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes.

Understanding task force recommendations. Rockville (MD): U.S. Preventive Services Task Force; 2015 Sep. 4 p. Available from the [U.S. Preventive Services Task Force \(USPSTF\) Web site](#) .

- Women: stay healthy at any age. 2014 update. Rockville (MD): Agency for Healthcare Research and Quality. AHRQ Pub. No. 14-IP007-A. 2014 Mar. 5 p. Available in [English](#) and [Spanish](#) from the AHRQ Web site.

Myhealthfinder is a tool that provides personalized recommendations for clinical preventive services specific to the user's age, gender, and pregnancy status. It features evidence-based recommendations from the USPSTF and is available at www.healthfinder.gov .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

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